REMARKS

I.   Status of the Claims

Claims 1-9 were pending in this application prior to this amendment.

With this amendment, claims 1-10 are pending. Claim 10 is new. Claims 1 and 5-9 have been amended. No new matter has been added by this amendment. Support for this amendment can be found throughout the Specification as originally filed and at least on pages 8-11.

II.   Objections

The Examiner objected to the Abstract.

In response to the objection, Applicant has amended the Abstract as shown above and respectfully requests that the objection now be withdrawn.

The Examiner objected to the disclosure.

In response to the objection, Applicant has amended the Field of the Invention and the Summary of the Invention for further clarification as shown above and respectfully requests that the objection now be withdrawn.

The Examiner objected to the use of double integration in Formula 4 on page 10. Page 10 of the Specification states that "F(d,c)'() indicates the differential value of the gray level conversion curve, i.e., the contrast."

Applicant submits that one of ordinary skill in the art, based on the teachings of the Specification, would know that F(d,c)'() can be integrated over and that double integration is proper.

The Examiner states on page 3 of the Office Action that "Applicant needs to clearly specify how to calculate the optimum D and C; how is applicant's way better than 'by trial and error while visually confirming it'. Also applicant needs to clearly specify whether the contrast enhancement is done in analog or digital domain."

Applicant respectfully submits that pages 9-12 of the Specification describe that the analyzing circuit 114 calculates a contrast improvement factor C(d) given by equation 4. A contrast improvement factor C(d) for a given parameter d is calculated using equation 4. This contrast improvement factor indicates the improvement in contrast from the entire image before

gray level conversion. The value of parameter d which gives the maximum contrast improvement factor C(d) is decided as the optimum parameter D.

Furthermore, one of ordinary skill in the art would know that the contrast enhancement as described in the Specification is done in the digital domain.

In view of the above, Applicant respectfully requests that the objection now be withdrawn.

III.   Rejections under 35 U.S.C. §101

Claim 8 has been rejected under 35 U.S.C. §101 as allegedly being directed to non-statutory subject matter.

In response to the rejection, Applicant has amended claim 8 as shown above and respectfully request that the objection now be withdrawn.

IV.   Rejections under 35 U.S.C. §112

Claims 1 and 7-9 have been rejected under 35 U.S.C. §112, first paragraph as allegedly failing to comply with the enablement requirement.

Specifically, the Office Action asserts that "a gray level conversion curve to be used for gray level conversion on the basis of a contrast of the image after gray level conversion of the radiographical image" lacks enablement. Further, the Office Action asserts that "[a]pplicant needs to clearly specify how to calculate the optimum D and C using formula 4; so that D and C can be plugged into formula 3. Applicant needs to specify how to find Dmax and Dmin."

Applicant respectfully traverses the rejection. The Specification describes on pages 9-12 that the gray level conversion curve F(d, c) (x) is given by equation 3. In equation 3, d is a parameter that indicates the translation amount of the gray level conversion curve with respect to the pixel value, and c is the contrast of the gray level conversion curve, which indicates the tilt amount of the gray level conversion curve. In addition, Dmax is a constant corresponding to the maximum density value and Dmin is a constant corresponding to the minimum density value.

The analyzing circuit 114 calculates a contrast improvement factor C(d) given by equation 4. A contrast improvement factor C(d) for a given parameter d is calculated using

equation 4. This contrast improvement factor indicates the improvement in contrast from the entire image before gray level conversion. The value of parameter d which gives the maximum contrast improvement factor C(d) is decided as the optimum parameter D.

Applicant believes that based on the teachings in the Specification one of ordinary skill in the art would understand the invention including how to calculate the gray level conversion curve.

Further, the Office Action asserts that "[c]laims 8 and 9 imply that a computer program is going to automatically figure out a gray level conversion curve…Automatic gray-level conversion is not disclosed in the Specification."

Applicant submits that the Specification describes on page 14 that the present invention "is also achieved by supplying a software program which implements the function of the above-described embodiment to the system or apparatus directly or from a remote site and causing the computer of the system or apparatus to read out and execute the supplied program code … Hence, to implement the functional processing of the present invention by a computer, the program code itself, which is installed in the computer, also implements the present invention."

In view of the above, Applicant respectfully requests that the rejection of claims 1 and 7-9 under 35 U.S.C. §112 now be withdrawn.

V.   Rejections under 35 U.S.C. §102

Claims 1-9 have been rejected under 35 U.S.C. §102(b) as allegedly anticipated by "Digital Image Processing, 2E" (ISBN-10 0201180758, published: 11/09/2001) by Gonzalez, et al. (hereafter, "Gonzalez").

The present invention is directed to executing gray level conversion processing on the basis of the contrast of the image resulting from gray level conversion of an original image.

The Office Action asserts that Gonzalez discloses "defining means for defining a gray level conversion curve to be used for gray level conversion on the basis of a contrast of the image after gray level conversion of the radiographical image; Page 77, Figure 3.2, and Page 78, Figure 3.4, show gray level transformation for contrast enhancement."

Referring to pages 7-8 of the original Specification, the analyzing circuit 114 defines a gray level conversion curve, with which the contrast of an image after gray level

conversion is maximized. The gray level conversion curve is defined on the basis of the contrast of the image resulting from gray level conversion of the original image. The gray level conversion circuit 115 converts the gray level of the original image on the basis of the gray level conversion curve defined by the analyzing circuit 114.

Gonzalez relates to basic gray level transformation functions i.e., linear (negative and identity transformations), logarithmic (log and inverse-log transformations) and power-law (nth power and nth root transformations). Gonzalez does not teach or suggest defining a gray level conversion curve on the basis of the contrast of the image resulting from gray level conversion of an original image.

Nonetheless, claim 1 has been amended for further clarification to recite, *inter alia*, "defining means for defining a gray level conversion curve to be used for gray level conversion on the basis of a value associated with a contrast of the an image after resulting from gray level conversion of the radiographical original image, the value being calculated from pixel values of the original image". Claims 7-9 have been amended to recite similar features to amended claim 1 as described herein.

Applicant submits that Gonzalez does not teach or suggest at least "defining means for defining a gray level conversion curve to be used for gray level conversion on the basis of a value associated with a contrast of an image resulting from gray level conversion of the original image, the value being calculated from pixel values of the original image", as required by amended independent claim 1.

Gonzalez merely discloses (page 77, figure 3.2 and page 78 figure 3.4) various basic gray level transformations (i.e., linear, logarithmic and power-law). Gonzalez provides no teaching or suggestion that a gray level conversion curve to be used for gray level conversion is defined on the basis of a value associated with a contrast of an image resulting from gray level conversion of the original image, as required by amended claim 1.

In view of the above, amended independent claim 1 is believed distinguishable from Gonzalez for at least the reasons discussed above.

Reconsideration and withdrawal of the rejection of claims 1 and 7-9 under 35 U.S.C. §102(b) is respectfully requested.

Applicant has not specifically addressed the rejections of the dependent claims (i.e., claims 2-6 and 10). Applicant respectfully submits that the independent claim from which

they depend either directly or indirectly, is in condition for allowance as set forth above. Accordingly, the dependent claims also are in condition for allowance. Applicant, however, reserves the right to address such rejections of the dependent claims in the future as appropriate.

Applicant believes that the application is in condition for allowance and such action is respectfully requested.

CONCLUSION

Based on the foregoing amendments and remarks, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims and allowance of this application.
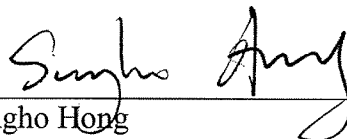
AUTHORIZATION

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. **13-4500**, Order No. 1232-5235. A DUPLICATE OF THIS DOCUMENT IS ATTACHED.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No **13-4500**, Order No. 1232-5235. A DUPLICATE OF THIS DOCUMENT IS ATTACHED.

Respectfully submitted,
MORGAN & FINNEGAN, L.L.P.

Dated: August 14, 2007   By:

Sungho Hong
Registration No. 54,571
(212) 415-8700   Telephone
(212) 415-8701   Facsimile

Correspondence Address:
MORGAN & FINNEGAN, L.L.P.
3 World Financial Center
New York, NY 10281-2101